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PATENT

Docket No. 150.01110101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Uhlenbrock et al.) Group Art Unit: 2822
Serial No.: 10/032,357) Examiner: Maria Guerrero
Confirmation No.: 4965)
Filed: December 21, 2001)
For: METHODS FOR PLANARIZATION OF GROUP VIII METAL-CONTAINING SURFACES USING OXIDIZING GASES

FACSIMILE TRANSMISSION TO THE PTO

Commissioner for Patents
Mail Stop Amendment
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The following papers are being transmitted to the Patent and Trademark Office by facsimile transmission: Information Disclosure Statement (2 pgs.); copy of European Communication mailed December 20, 2004 (4pgs.); copy of International Preliminary Examination Report mailed March 26, 2004 (10 pgs.)

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Mueting, Raasch & Gebhardt, P.A.
Customer Number: 26813

April 20, 2005
Date

By: Ann M. Mueting
Ann M. Mueting
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CERTIFICATE UNDER 37 C.F.R. §1.8: The undersigned hereby certifies that this Facsimile Cover Sheet and the paper(s), as described hereinabove, are being transmitted by facsimile in accordance with 37 CFR §1.6(d) to the Patent and Trademark Office addressed to the Commissioner for Patents, Mail Stop Amendment, P.O. Box 1450, Alexandria, VA 22313-1450, on this 20th day of April, 2005, at 12:53pm (Central Time).

April 20, 2005
Date

Signature: Sara E. Olson
Name: Sara E. Olson

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PATENT
Docket No. 150.01110101IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | | |
|--|---|-----------------|----------------|
| Applicant(s): Uhlenbrock et al. |) | Group Art Unit: | 2822 |
| |) | | |
| Serial No.: 10/032,357 |) | Examiner: | Maria Guerrero |
| Confirmation No.: 4965 |) | | |
| |) | | |
| Filed: December 21, 2001 |) | | |
| |) | | |
| For: METHODS FOR PLANARIZATION OF GROUP VIII METAL-CONTAINING SURFACES USING OXIDIZING GASES |) | | |

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir,

In compliance with the duty imposed by 37 C.F.R. § 1.56, and in accordance with C.F.R. §§ 1.97 *et. seq.*, the material enclosed herewith is brought to the attention of the Examiner as possibly being of interest in connection with the above-identified patent application. Attached is a copy of a Communication pursuant to Article 96(2) EPC mailed December 20, 2004 from the related European Application Number 02787053.4 and a copy of the International Preliminary Examination Report mailed March 26, 2004 from related PCT Application Number US 02/40407. Per M.P.E.P. § 609, the information cited in the present Information Disclosure Statement shall not be construed to be an admission that the information is, or is considered to be, material to patentability.

It is believed that no fee is due, as this Information Disclosure Statement is filed prior to the receipt of any Action on the merits. However, in the event a fee is due, please charge any fee or credit any overpayment to Account No. 13-4895.

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APR 20 2005

Information Disclosure Statement

Page 2 of 2

Applicant(s): Uhlenbrock et al.

Serial No.: 10/032,357

Confirmation No.: 4965

Filed: 21 December 2001

For: METHODS FOR PLANARIZATION OF GROUP VIII METAL-CONTAINING SURFACES USING
OXIDIZING GASES

The Examiner is invited to contact Applicants' Representatives at the below-listed telephone number, if they can be of any assistance during prosecution of the present application.

Respectfully submitted for

Uhlenbrock et al.

By

Muetting, Raasch & Gebhardt, P.A.

P.O. Box 581415

Minneapolis, MN 55458-1415

Phone: (612)305-1220

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Customer Number 26813

CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper is being transmitted by facsimile in accordance with 37 CFR §1.6(d) to the Patent and Trademark Office, addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 20th day of April, 2005, at 12:53pm (Central Time).

Name: Sara E. Olson

April 20, 2005
Date

By:


Ann M. Muetting

Reg. No. 33,977

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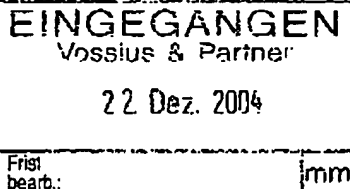
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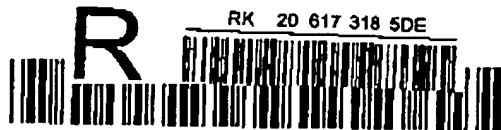
COPY



Telephone numbers: Branch at The Hague

Primary Examiner (substantive examination) +31 70 340-2962

Formalities Officer / Assistant (Formalities and other matters) +31 70 340-2264



| | | |
|--|------------------|--------------------|
| Application No. 02 787 053.4 - 1235 ✓ | Ref. K1744 EP | Date 20.12.2004 |
| Applicant MICRON TECHNOLOGY, INC. | | |

Communication pursuant to Article 96(2) EPC

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

3/26/04 REMINDER
4/20/04 RESPONSE

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).



HEDOUIN M F G
Primary Examiner
for the Examining Division

Enclosure(s): 3 page/s reasons (Form 2906)

Registered Letter



Beschaid/Protokoll (Anlage)

Communication/Minutes (Annex)

Notification/Procès-verbal (Annexe)

 Datum
Date 20.12.2004
Date

 Blatt
Sheet 1
Feuille

 Anmelde-Nr.:
Application No.: 02 787 053.4
Demande n°:

The examination is being carried out on the following application documents:

Description, Pages

1-15 as originally filed

Claims, Numbers

1-20 received on 14.01.2004 with letter of 09.01.2004

Drawings, Sheets

½-2/2 as originally filed

The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

- D1: EP-A-1 156 091 (SIEMENS AG ;INFINEON TECHNOLOGIES AG (DE)) 21 November 2001 (2001-11-21)
- D2: EP-A-1 111 083 (INFINEON TECHNOLOGIES AG) 27 June 2001 (2001-06-27)
- D3: WO 00/77107 A (UNGER EUGEN ;BEITEL GERHARD (DE); SAENGER ANNETTE (DE); INFINEON T) 21 December 2000 (2000-12-21)
- D4: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 10, 17 November 2000 (2000-11-17) & JP 2000 200782 A (HITACHI LTD), 18 July 2000 (2000-07-18)
- D5: US-A-6 110 830 (MCTEER ALLEN ET AL) 29 August 2000 (2000-08-29)
- D6: US-B-6 278 1531 (MATSUI KOJI ET AL) 21 August 2001 (2001-08-21)


An international preliminary examination report has already been drawn up for the present application in accordance with the PCT. The deficiencies mentioned in that report give rise to objections under the corresponding provisions of the EPC.

I. The present application does not meet the requirements of Article 52(1) EPC, because the subject-matter of the following set of claims is not new in the sense of Article 54(1) and (2) EPC.

1.a) The document D1 is regarded as being the closest prior art to the subject-matter of claim 1-7, and discloses:

* A planarization method comprising:

positioning a Group VIII metal-containing surface of a substrate to interface with a polishing surface, wherein the Group VIII metal is selected from the group consisting of

| | | | |
|---|-----------------------------|--------------------------------|---|
|  | Bescheid/Protokoll (Anlage) | Communication/Minutes (Annex) | Notification/Procès-verbal (Annexe) |
| | Datum Date 20.12.2004 | Blatt Sheet Feuille 2 | Anmelde-Nr.: Application No.: Demande n°: 02 787 053.4 |

rhodium, iridium, ruthenium, osmium, palladium, platinum, and combinations thereof; supplying an acidic (D1, column 4, line 35) planarization composition in proximity to the interface; and planarizing the Group VIII metal-containing surface; wherein the planarization composition comprises an oxidizing gas. (paragraph [12-16] and claim 6 and 9).

b) Then, it is obvious that the planarization composition contains oxidizing gas having a standard reduction potential of at least 1.4 versus a standard hydrogen electrode at 25°C. Indeed, there is no doubt that this precised solution has been exposed prior and during the planarization step to air. It therefore contains dissolved oxygen.

c) Moreover, D1 discloses specifically the use of Ozone (O₃) which is a gas having a standard reduction potential of 2.076 V versus normal hydrogen electrode at 25°C. As a consequence, claim 1 is not new (Article 54(1) and (2) EPC).

For the sake of completeness it is mentioned that the novelty of claim 1 is also affected by D3. (page 3-5 and claim 3)

2. Claim 2, 3, 4, 6 and 7 are not new as D1 discloses group VIII metal containing surface, made of Pt, Ru, Pd, Os, Ir (Column 4, line 28-30) on a semiconductor substrate (figure 6). Furthermore, the planarization composition comprises a plurality of abrasive particles (paragraph 12 and 24).

3. Claim 11 and 13 are not new as D1 discloses the use of ozone and oxygen (Column 4, line 34).

4. Claim 16, 18-20 are not new. D1 which is considered the closest prior art discloses a planarization method according to claim 1, where the substrate is a silicon wafer having a pattern dielectric layer formed thereon, and where a platinum region is formed over the patterned dielectric (D1, fig. 5 and 6 and page 5-paragraph [31]).

II. The present application does not meet the requirements of Article 52(1) EPC, because the subject-matter of the following set of claim does not involve an inventive step in the sense of Article 56 EPC.

1. Claim 5, is not inventive, because it would be obvious for the person skilled in the art to use alloy.



Bescheid/Protokoll (Anlage)

Communication/Minutes (Annex)

Notification/Procès-verbal (Annex)

Datum
Date
Date

20.12.2004

Blatt
Sheet
Feuille

3

Anmelde-Nr.:

Application No.: 02 787 053.4

Demande n°:

2. Claim 8 and 9 are not inventive. Indeed, as suggested in D1 (paragraph 9) and further detailed in D3, the use of abrasive particles on Ru, Rh, Pd, Os, Ir, Pt (D3, column 7, line 44) such as SiO_2 and Al_2O_3 is known (D3, paragraph 9). Therefore, the use of such particles is not inventive. Moreover, these particles are known as having a hardness no greater than 9 Mohs.

3. Claim 10 is not inventive, because obvious.

4. Claim 12 is not inventive, adding air to the gas mixture would be obvious to the person skilled in the art.

5. Claim 14 is not inventive, as it would be obvious for the person skilled in the art to use fixed abrasive article.

6. Claim 15 is not inventive. Indeed, it precises that the oxidising gas is present in an amount of no greater than 10% by weight. This feature is however obvious. Indeed, the person skilled in the art would depending on the experimental setup tune the parameters such as amount of oxidising gas, in order to get the desired effect, see for example D2, column 7, line 14.

7. Claim 17 is not inventive, because it is obvious see paragraph 3 of the present communication.

8. To conclude, it seems that the objections raised above are such that there appears to be no possibility of overcoming them by amendment. Refusal of the application under Article 97(1) EPC is therefore to be expected at the next procedural stage.

TENT COOPERATION TRE. Y

COPYFrom the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY**PCT**

To:

MUETING, Ann M.
MUETING, RAASCH & GEBHARDT, P.A.
P.O. Box 581415
Minneapolis, MN 55458-1415
ETATS-UNIS D'AMERIQUE

**NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

(PCT Rule 71.1)

Date of mailing
(day/month/year)

26.03.2004

Applicant's or agent's file reference
150.01110201

IMPORTANT NOTIFICATION

International application No.
PCT/US 02/40407

International filing date (day/month/year)
17.12.2002

Priority date (day/month/year)
21.12.2001

Applicant
MICRON TECHNOLOGY, INC.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the International
preliminary examining authority:



European Patent Office - P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Pays Bas
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl
Fax: +31 70 340 - 3016

Authorized Officer

Bakvis, J

Tel. +31 70 340-3230



TENT COOPERATION TRE. Y



PCT**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

| | | |
|---|---|--|
| Applicant's or agent's file reference 150.01110201 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/16) | |
| International application No. PCT/US 02/40407 | International filing date (day/month/year) 17.12.2002 | Priority date (day/month/year) 21.12.2001 |
| International Patent Classification (IPC) or both national classification and IPC H01L21/321 | | |
| Applicant MICRON TECHNOLOGY, INC. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

| | |
|---|---|
| Date of submission of the demand 22.07.2003 | Date of completion of this report 26.03.2004 |
| Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 | Authorized Officer Hedouin, M Telephone No. +31 70 340-2982  |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**International application No. **PCT/US 02/40407****I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-15 as originally filed

Claims, Numbers

1-20 received on 14.01.2004 with letter of 09.01.2004

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**International application No. **PCT/US 02/40407**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|--------------------------|
| Novelty (N) | Yes: Claims | 5,8,9,10,12,14,15,17 |
| | No: Claims | 1,2,3,4,6,11,13,16,18-20 |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-20 |
| Industrial applicability (IA) | Yes: Claims | 1-20 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

INTERNATIONAL PRELIMINARY International application No. PCT/US02/40407
EXAMINATION REPORT - SEPARATE SHEET

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: EP-A-1 156 091 (SIEMENS AG ;INFINEON TECHNOLOGIES AG (DE)) 21 November 2001 (2001-11-21)

D2: EP-A-1 111 083 (INFINEON TECHNOLOGIES AG) 27 June 2001 (2001-06-27)

D3: WO 00 77107 A (UNGER EUGEN ;BEITEL GERHARD (DE); SAENGER ANNETTE (DE); INFINEON T) 21 December 2000 (2000-12-21)

I. The following set of claims is not novel (Article 33(2) PCT).

1.a) The document D1 is regarded as being the closest prior art to the subject-matter of claim 1-7, and discloses:

* A planarization method comprising:

positioning a Group VIII metal-containing surface of a substrate to interface with a polishing surface, wherein the Group VIII metal is selected from the group consisting of rhodium, iridium, ruthenium, osmium, palladium, platinum, and combinations thereof; supplying an acidic (D1, column 4, line 35) planarization composition in proximity to the interface; and planarizing the Group VIII metal-containing surface; wherein the planarization composition comprises an oxidizing gas. (paragraph [12-16] and claim 6 and 9).

b) Then, It is obvious that the planarization composition contains oxidizing gas having a standard reduction potential of at least 1.4 versus a standard hydrogen electrode at 25°C. Indeed, there is no doubt that this precised solution has been exposed prior and during the planarization step to air. It therefore contains dissolved oxygen.

c) Moreover, D1 discloses specifically the use of Ozone (O₃) which is a gas having a standard reduction potential of 2.076 V versus normal hydrogen electrode at 25°C. As a consequence, **claim 1 is not new (Art 33(2)PCT).**

For the sake of completeness it is mentioned that the novelty of claim 1 is also affected by D3. (page 3-5 and claim 3)

INTERNATIONAL PRELIMINARY International application No. PCT/US02/40407
EXAMINATION REPORT - SEPARATE SHEET

2. Claim 2, 3, 4, 6 and 7 are not new as D1 discloses group VIII metal containing surface, made of Pt, Ru, Pd, Os, Ir (Column 4, line 28-30) on a semiconductor substrate (figure 6). Furthermore, the planarization composition comprises a plurality of abrasive particles (paragraph 12 and 24).

3. Claim 11 and 13 are not new as D1 discloses the use of ozone and oxygen (Column 4, line 34).

4. Claim 16, 18-20 are not new. D1 which is considered the closest prior art discloses a planarization method according to claim 1, where the substrate is a silicon wafer having a pattern dielectric layer formed thereon, and where a platinum region is formed over the patterned dielectric (D1, fig. 5 and 6 and page 5-paragraph [31]).

II. The following set of claim does not involve an inventive step (Article 33(3) PCT).

1. Claim 5, is not inventive, because it would be obvious for the person skilled in the art to use alloy.

2. Claim 8 and 9 are not inventive. Indeed, as suggested in D1 (paragraph 9) and further detailed in D3, the use of abrasive particles on Ru, Rh, Pd, Os, Ir, Pt (D3, column 7, line 44) such as SiO_2 and Al_2O_3 is known (D3, paragraph 9). Therefore, the use of such particles is not inventive. Moreover, these particles are known as having a hardness no greater than 9 Mohs.

3. Claim 10 is not inventive, because obvious.

4. Claim 12 is not inventive, adding air to the gas mixture would be obvious to the person skilled in the art.

5. Claim 14 is not inventive, as it would be obvious for the person skilled in the art to use fixed abrasive article.

6. Claim 15 is not inventive. Indeed, it specifies that the oxidising gas is present in an amount of no greater than 10% by weight. This feature is however obvious. Indeed, the

INTERNATIONAL PRELIMINARY International application No. PCT/US02/40407
EXAMINATION REPORT - SEPARATE SHEET

person skilled in the art would depending on the experimental setup tune the parameters such as amount of oxidising gas, in order to get the desired effect, see for example D2, column 7, line 14.

7. **Claim 17 is not inventive**, because it is obvious see paragraph 3 of the present communication.

III. Claims 1-20 meet the requirements of industrially applicable (Article 33(4) PCT)

14-01-2004

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EPO - DG 1

14. 01. 2004

What Is Claimed Is:

1. A planarization method comprising:

(96)

positioning a Group VIII metal-containing surface of a substrate
to interface with a polishing surface, wherein the Group VIII metal is
selected from the group consisting of rhodium, iridium, ruthenium,
osmium, palladium, platinum, and combinations thereof;

supplying an acidic planarization composition in proximity to the
interface;

feeding an oxidizing gas into the planarization composition;

and

planarizing the Group VIII metal-containing surface;

wherein the oxidizing gas has a standard reduction potential of at
least about 1.4 versus a standard hydrogen electrode at 25°C.

2. The method of claim 1 wherein the Group VIII metal-containing
surface of the substrate comprises a Group VIII metal in elemental form
or an alloy thereof.

3. The method of claim 2 wherein the Group VIII metal-containing surface
comprises elemental platinum, rhodium, iridium, ruthenium, or a
combination thereof.

4. The method of claim 3 wherein the Group VIII metal-containing surface
comprises elemental platinum.

5. The method of any one of claims 1-4 wherein the Group VIII metal is
present in an amount of about 10 atomic percent or more.

6. The method of any one of claim 1-5 wherein the substrate is a
semiconductor substrate or substrate assembly.

14-01-2004

US02404

7. The method of any one of claims 1-6 wherein the polishing surface comprises a polishing pad and the planarization composition comprises a plurality of abrasive particles.
- 5 8. The method of claim 7 wherein the planarization composition comprises a plurality of abrasive particles having a hardness of no greater than about 9 Mohs.
- 10 9. The method of claim 8 wherein the plurality of abrasive particles comprise CeO_2 , Al_2O_3 , SiO_2 , and mixtures thereof.
10. The method of any one of claims 1-9 which is carried out in one step.
- 15 11. The method of any one of claims 1-10 wherein the oxidizing gas is selected from the group consisting of oxygen, ozone, air, chlorine, nitrous oxide, nitric oxide, sulfur trioxide, an interhalogen, and combinations thereof.
- 20 12. The method of claim 11 wherein the oxidizing gas is selected from the group consisting of oxygen, air, and combinations thereof.
13. The method of claim 12 wherein the oxidizing gas is oxygen.
- 25 14. The method of any one of claims 1-6 and 10-13 wherein planarizing is carried out using a fixed abrasive article.
- 30 15. The planarization method of any one of claims 1-14 wherein the oxidizing gas is fed into the composition in an amount of no greater than about 10% by weight.
16. The planarization method of any one of claims 1, 3, 5, and 7-15 wherein the substrate is a semiconductor substrate or substrate assembly comprising at least one region of a platinum-containing surface; and the

14-01-2004

US02404

method comprises planarizing the at least one region of platinum-containing surface.

- 5 17. The method of claim 16 wherein the platinum-containing surface comprises a platinum alloy.
18. The method of claim 16 wherein the platinum-containing surface comprises elemental platinum.
- 10 19. The method of any one of claims 1-18 wherein the substrate is a silicon wafer.
20. The planarization method of any one of claims 1-19 wherein the
- 15 substrate is a wafer having a patterned dielectric layer formed thereon and the metal-containing layer formed over the patterned dielectric layer and wherein the planarization method is used in forming a capacitor or barrier layer.

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